SoftMotion: DriveInterface: LenzeECS

Last update: 13.01.2006

Hardware interface	CAN; must support 3S_CANdrv.lib
Supported drives	LenzeECSxM
Runtimes	x86
Author	Edwin Schwellinger/Hilmar Panzer
Components	LenzeECSDrive.lib; 3S_CanDrv.lib; SM_CAN.lib; SysLibCallback.lib; SysLibFile.lib
Version	1.9.1.0 (13.01.2006)

CONTENT

1 Parameters in PLC config

1.1 BusInterface

wParam1	Not used
wParam2	Not used
dwParam1	Not used
dwParam2	Not used

1.2 AxisGroup

wParam1	CAN channel No (typically 0)
wParam2	Baudrate in kBit (125, 250, 500, 1000)
wParam3	SYNC generator: 0: PLC generates SYNC (only possible if PLC is highly precise); 1: first drive of AxisGroup generates SYNC 2: SYNC device generates SYNC (additional hardware needed)
wParam4	Not used
dwParam1	Reserved
dwParam2	Reserved
dwParam3	Not used
dwParam4	Not used

1.3 supported Drive.wControlType

T / - no	V/V no	V/P no	P/P yes	PV/PV no	V/- no	CONF no

The cyclically sent data must consist of: fSetPosition.

The received data can consist of: fActPosition.

1.4 Additional structure *LenzeECS_AXIS_REF*

name	Type	
byDriveState	BYTE	internal use: state of drive
wStatusWord	WORD	Status word C150
wControlWord	WORD	Control word C135
wStatusWordOld	WORD	internal use
byStatusInfo	BYTE	Bit8-11 of status word
strConfigFile	STRING	full name and path of config file
acit		internal use

2 Features

- **RegulatorOn, DriveStart**
- Detecting and acknowledging **errors**
- **reading/writing** SoftMotion and **drive parameters** (to access index 0xaabb subindex 0xcc with length 0xdd in byte (only necessary for writing) either use MC_Read/Write(Bool)Parameter with parameter number -16#ddaabbcc) or better use specif FBs LenzeECSReadParameter and LenzeECSWriteParameter to access the Lenze Code positions directly
- any **gearing factors** (dwRatioTechUnitsDenom/iRatioTechUnitsNum)
- **linear/rotary axes**
- **controlling modes**: position
- drive internal **homing** (first configure C3010, C0935, C0936)
  Note: during homing, the actual position is not reported from the drive!
- **latching**: 1 channel (TriggerNumber = 1)
- **limit switches** should be connected to the drive. When the homing method is not active, an error is set if one of them gets FALSE.
- **configuration from file**
- **configuration from dialogs in PLC config**
- supported **SYNC generators** (to be set in PLC Configuration, AxisGroup) : PLC, 1st drive, SYNC-Device

3 configured parameters during startup

The following parameters are set during startup:

parameter	value set during startup		
	SYNC generator: PLC or SYNC-device	SYNC generator: 1st drive	
C352	0	0	CAN slave
C353/1	0	0	Address mode
C356/3	cycle time	cycle time	PDO cycle
C356/4	0	0	Delay time PDO
C1120	1	0	SYNC mode
C1121	cycle time	cycle time	SYNC cycle
C367	128	129	SYNC Rx ID
C368	128	128	SYNC Tx ID
C1123	cycle time/2	cycle time/2	SYNC window
C369	0	cycle time	SYNC generator cycle
C366	1	1	SYNC response

4 CAN-Traffic

base load:

Telegram	*Data bytes*	*Bit length*	*125 kBit/s*	*250 kBit/s*	*500 kBit/s*	*1 MBit/s*
SYNC	0	47	0,376 ms	0,188 ms	0,094 ms	0,047 ms
SDO	8	111	0,888 ms	0,444 ms	0,222 ms	0,111 ms
overall			1,264 ms	0,632 ms	0,316 ms	0,158ms

per drive :

Telegram	*Data bytes*	*Bit length*	*125 kBit/s*	*250 kBit/s*	*500 kBit/s*	*1 MBit/s*
Control Word, set position	8	111	0,888 ms	0,444 ms	0,222 ms	0,111 ms
Status Word, actual position	8	111	0,888 ms	0,444 ms	0,222 ms	0,111 ms
overall			1,776 ms	0,888 ms	0,444 ms	0,222 ms

According to that, the following table shows the maximum number of drives per cycle time:

max. number of drives	125 kBit/s	250 kBit/s	500 kBit/s	1 MBit/s
1 ms	0	0	1	3
2 ms	0	1	3	8
3 ms	0	2	5	12
4 ms	1	3	8	16
5 ms	2	5	10	20
6 ms	2	6	12	24
8 ms	3	8	16	32